

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-25 (Canceled).

Claim 26 (Currently Amended): A vapor deposition material comprising a polycrystalline body, a sintered body, or single crystal having a surface covered with a fluoride layer, wherein the fluoride layer comprises a material of formula



wherein M is Mg, Ca, Sr, Ba, an alkali earth compound metal, a rare earth metal, or a compound metal of an alkali earth metal and rare earth metal, and $0 < X < 2$ and $[[0 \leq Y \leq 4]]$ $0 < Y \leq 4$.

Claim 27. (Previously Presented): The vapor deposition material according to claim 26 wherein said polycrystalline body, sintered body, or single crystal is formed from one or more oxides selected from the group consisting of MgO, CaO, SrO, BaO, an alkaline earth composite oxide, a rare earth oxide, and a composite oxide of an alkaline earth oxide and a rare earth oxide.

Claim 28 (Previously Presented): The vapor deposition material according to claim 26, wherein said fluoride layer is obtained by reacting a fluoridation agent with one or more oxides selected from the group consisting of MgO, CaO, SrO, BaO, an alkaline earth composite oxide, a rare earth oxide, and a composite oxide of an alkaline earth oxide and a rare earth oxide.

Claim 29 (Previously Presented): An FPD obtained by vapor depositing the vapor deposition material according to claim 26 onto a substrate.

Claim 30 (Previously Presented): The vapor deposition material according to Claim 26, wherein the fluoride layer is from 0.1 nm to 100 μm in thickness.

Claim 31 (Previously Presented): The vapor deposition material according to Claim 26, wherein the fluoride layer is from 1 nm to 1 μm in thickness.

Claim 32 (Previously Presented): The vapor deposition material of Claim 26, wherein the entire surface of the polycrystalline body, sintered body, or single crystal is covered with a fluoride layer.

Claim 33 (Previously Presented): The vapor deposition material of Claim 26, comprising a polycrystalline body covered with a fluoride layer.

Claim 34 (Previously Presented): The vapor deposition material of Claim 26, comprising a sintered body covered with a fluoride layer.

Claim 35 (Previously Presented): The vapor deposition material of Claim 26, comprising a single crystal covered with a fluoride layer.

Claim 36 (Previously Presented) The vapor deposition material of Claim 26, wherein $0.25 \leq X < 2$.

Claim 37 (Previously Presented) The vapor deposition material of Claim 26, wherein
 $0.5 \leq X < 2$.

Claim 38 (Previously Presented) The vapor deposition material of Claim 26, wherein
 $1 \leq Y \leq 4$.

Claim 39 (Previously Presented) The vapor deposition material of Claim 26, wherein
the fluoride layer is a material selected from the group consisting of $\text{MO}_{0.5}\text{F}$, $\text{MO}_{0.25}\text{F}_{1.25}$,
 MOF_2 , MOF , and $\text{MOF}_{0.66}$.

Claim 40 (Currently Amended) The vapor deposition material of Claim 26, wherein
the ~~film body~~ polycrystalline body, sintered body or single crystal is free of a substrate.

BASIS FOR THE AMENDMENT

Claims 26-40 are active in the present application. Claim 1 has been amended to correct a typographical error. Claim 40 has been amended for clarity. No new matter is added.

REQUEST FOR RECONSIDERATION

Applicants thank Examiner Blum for the helpful and courteous discussion of April 14, 2004. During the discussion, Applicants' U.S. representative presented arguments that the process for preparing a fluoride-containing film described in the prior art cited against the claims of the present application do not produce a film that contains a metal atom, oxygen and fluorine.

The Office rejected Claims 26-30, 33-35, 38 and 40 as anticipated by a patent to Konishi (U.S. 5,891,531). Applicants respectfully traverse the rejection and submit that Konishi does not disclose a vapor deposition material having a surface covered with a fluoride layer comprising a material of formula MO_xF_y where $0 < X < 2$ and $0 < Y \leq 4$.

The Office cited to column 8 as support for the assertion that the prior art patent discloses materials that have "very little impurities, such as oxygen" (page 4 of the Office Action of January 23, 2004). Konishi repeatedly and consistently discloses that the film deposited with the prior art process contains "very little impurities, such as carbon, oxygen, and organic substances" (see column 8, lines 30-33; column 8, lines 50-52; and column 10, lines 27-29). The compositional characteristics of the film produced by the prior art process is described at column 10, lines 18-26 of Konishi:

"By the process of the present invention, a thin film of a fluoride glass, such as ZrF_4 - BaF_2 - LaF_3 - AlF_3 - NaF fluoride glasses, InF_3 - BaF_2 - YF_3 fluoride glasses, InF_3 - PbF_2 - ZnF_2 fluoride glasses, and AlF_3 - CdF_2 - PbF_2 - LiF fluoride glasses, or a thin film or a fluoride crystal, such as $ZnF_2:Mn$, $ZnF_2:Gd$, $LiYF_4$, CaF_2 , $YF_3:Tm$, $CaF_2:Eu$, and $CdF_2:In$, can be produced, and a highly pure, transparent, and consolidated thin film of fluoride can be obtained."

The above-cited disclosure of Konishi evidences that the fluoride films of Konishi are not intended to be fluoride films of formula MO_xF_y as recited in present independent Claim 26 but instead do not contain oxygen.

It appears that the Office may be asserting that the disclosure in Konishi that the prior art films may contain very little impurities such as oxygen is a teaching that any oxygen present in the prior art film would be present as a metal fluoride material of formula MO_xF_y (e.g., the office is asserting that a metal-oxyfluoride is formed in the prior art process). Applicants traverse this assertion on the grounds that Konishi explicitly discloses that the prior art process can be used to prepare films that do not contain oxygen. Further, in the Examples of Konishi it is disclosed that numerous metal precursors such as $Ba(HFA)_2$ (tetraglyme) (column 10, line 51), where HFA is hexafluoroacetate, can be reacted with fluorine precursors such as NF_3 to provide a thin film (see Example 1 at column 10, line 47 through column 11, line 15). The thin film prepared from such an oxygen-containing barium precursor (i.e., HFA) is analyzed for its elemental makeup using x-ray photoelectron spectroscopy, a spectrum of which is provided in Figure 2. As disclosed in Konishi:

“FIG. 2 shows the spectrum of the obtained thin film of a fluoride by X-ray photoelectron spectroscopy (XPS). This figure show that the obtained thin film was a *fluoride composed of Zr, Ba, Eu, and F alone and containing no residual carbon or oxygen*” (emphasis added; column 11, lines 4-8).

Therefore, Konishi explicitly discloses in Example 1 that even though an oxygen-containing metal precursor is used to prepare the prior art film, no oxygen is contained in the film according to the XPS analysis.

Example 2 of Konishi repeats Example 1 however the pressure at which the process is carried out is greater. The film obtained in Example 2 has “a slight color of light brown” (column 11, line 58). An analysis of the film using infrared shows that a $C=O$ absorption is present at 1240 cm^{-1} (column 11, line 65). Therefore, in Example 2 an oxygen impurity is present as demonstrated by the $C=O$ vibration in the infrared. Importantly, Example 2 shows that when oxygen (or carbon) is present it is in the form of a carbonyl group and not in the form of a metal-oxyfluoride. The oxygen of Example 2 may represent the decomposition

residue of one of the ligands surrounding the oxygen-containing metal precursor such as Ba(HFA)(tetraglyme).

Applicants submit that the disclosure of Konishi does not encompass metal-oxyfluoride materials such as MO_xF_y .

The Office has asserted that Applicants must show criticality in order to demonstrate the patentability of the claimed invention. Applicants submit that while it may be necessary to show criticality when a claimed embodiment lies within the scope of the prior art, an invention claimed outside the scope of the prior art cannot be anticipated or rendered obvious by the prior art and a “showing of criticality” may not be necessary. In the present case the scope of the claimed invention (e.g., wherein the presence of a material of formula MO_xF_y is required) does not lie within the disclosure of the prior art relied upon by the Office as evidenced by the prior art’s silence to thin films comprising MO_xF_y materials. This is further supported by the prior art’s express teaching away from oxygen-containing films.

The Office further rejected Claims 27 and 28 under the judicially created doctrine of obviousness-type double patenting in view of Claims 1 and 4 of co-pending application U.S. Serial No. 09/457,743. Claims 1 and 4 of co-pending 09/457,743 are drawn to an “FPD protecting film” whereas Claims 27 and 28 of the present application are drawn to a “vapor deposition material.” Applicants submit that the protecting film of the co-pending application does not necessarily render the vapor deposition material of the present claims obvious.

An FPD protecting film may be applied onto a FPD (flat panel display) to protect the surface of the display or to enhance the properties thereof. On the other hand, a vapor deposition material may be used as a source material for depositing a film that may function as an FPD protecting film. Therefore, although a vapor deposition material can be used to prepare an FPD protecting film, the function of the vapor deposition material may be different from the function of an FPD protecting film. Applicants submit that the vapor

deposition material of the present claims is not obvious in view of the FPD protecting film of the co-pending application and respectfully request the withdrawal of the rejection.

Applicants submit the present claims are novel and not obvious in view of the prior art relied upon by the Office. Applicants submit the rejections of record are not sustainable and should be withdrawn.


Applicants submitted an Information Disclosure Statement containing a form PTO-1449 listing the English translation of a previously submitted reference on March 4, 2004. Applicants submitted an IDS on December 18, 2003 providing a List of Related Cases. The Office is respectfully requested to acknowledge consideration of the reference provided on the IDS submitted on March 4, 2004 by return of a signed, dated and initialed copy of the form PTO-1449 submitted on March 4, 2004. The Office is further requested to acknowledge consideration of the references provided on the List of Related Cases submitted to the Office with an IDS on December 18, 2003 by including a statement in the next communication from the Office that the references, or claims or drawings thereof, have been considered in the examination of the above-identified application.

Respectfully submitted,

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